Operating Instructions

ConSig

Control and signal station

> 8040

STAHL

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2 General Information

2.1 Manufacturer

R. STAHL Schaltgeräte GmbH
Am Bahnhof 30
D-74638 Waldenburg

Telephone: +49 7942 943-0
Fax: +49 7942 943-4333
Internet: www.stahl.de

2.2 Information about the Operating Instructions

ID NO.: 8040606300
Publication Code: S-BA-8040-en-02-15/06/2007
We reserve the right to make technical changes without notice.

2.3 Purpose of these instructions

Working in hazardous areas, the safety of personnel and plant depends on complying with all relevant safety regulations.
Assembly and maintenance staff working on installations therefore have a particular responsibility. They require precise knowledge of the applicable standards and regulations.
These instructions give a brief summary of the most important safety measures. They supplement the corresponding regulations which the staff responsible must study.

3 Safety instructions

Use the station only for its intended purpose.

Incorrect or impermissible use or non-compliance with these instructions invalidates our warranty provision.

No changes to the station impairing its explosion protection are permitted.

Mount the station only if it is clean and undamaged.

Observe the following when using the station:

- National safety regulations
- National accident prevention regulations
- National installation regulations (e.g. IEC 60079-14)
- Generally recognized technical regulations
- Safety guidelines in these operating instructions
- Characteristic values and rated operating conditions on the rating and data plates
- Additional instruction plates on the station

Any damage can invalidate the Ex-protection.

4 Conformity to standards

The station complies with the following standards and regulations:

- Directive 94/9/EC
- EN 60079-0, EN 60079-7, EN 61241-0, EN 61241-1
- IEC 60079-0, IEC 60079-1, IEC 60079-11, IEC 60079-18, IEC 60079-7, IEC 61241-0, IEC 61241-1

Type 8040 station is suitable for use in hazardous areas, zones 1, 2 and 21, 22.

5 Function

Type 8040 control and signal stations are explosion-protected equipments for local mounting. They are used for control and switching functions in hazardous areas.

6 Technical data

Version	**Type 8040**
Explosion protection	
Gas explosion protection	⟨Ex⟩ II 2 G Ex edqm ia/ib [ia/ib] II, IIA, IIB, IIC, T6, T5 or T4
Gas explosion protection (IECEx)	Ex de ia/ib [ia/ib] m II, IIA, IIB, IIC, T6, T5 or T4
Dust explosion protection	⟨Ex⟩ II 2 D Ex tD A21 IP 65 T 80 °C, T 95 °C, T 130 °C
Dust explosion protection (IECEx)	Ex tD A21 IP65 T 80 °C, T 95 °C
Certificates	
Gas explosion protection	PTB 01 ATEX 1105
Dust explosion protection	PTB 01 ATEX 1105
IECEx certification	IECEx PTB 06.0025
Rated working voltage	max. 690 V, AC
Rated working current	depends on components used
Operating temperature range	- 20 °C ... + 40 °C - 50 °C ... + 60 °C on request
Cable entries	Standard: 1 x M 25 x 1.5; cable gland 8161; side below (D); directly mounted into enclosure wall Special: in side C (top) and/or side D (below); 1 x M 20 x 1.5; 1 x M 25 x 1.5; metal cable glands are possible; mounting of metal cable glands in metal flange or via metal adapter plate
Max. Cross-section for connection	2.5 mm^2
Terminal tightening torque	max. 1.2 Nm
Flanges	In standard design the enclosures are **without** flanges; On request they can be fitted with flanges on sides C and D. Flanges are available in: polyester resin or in brass, powder-coated, dark grey similar to RAL 7024
Degree of protection	IP 66
Material	
Housing	Polyester resin (glass fibre-reinforced)
Gaskets	PU foam
Cover fixing	M 4, cheese head screws, imprescriptible, stainless steel

⚠ WARNING

- With ambient temperatures < -20 °C, cable entries „suitable for low temperatures“ must be used, or the station must be so positioned that the cable entries are mechanically protected.
- The electrical data is affected by the devices fitted. Please refer to the individual type and rating plates.

☞	If cable glands other than those manufactured by Fa. R. STAHL Schaltgeräte GmbH are used, then their degree of protection should be noted.

Technical data of R. STAHL devices which can be fitted:

Version	**Type 8010 Indicating lamp**	
Certificates	PTB 01 ATEX 1160 U	
Rated working voltage	20 V ... 254 V	
Rated working current I_e	Ex e:	max. 15 mA
	Ex i:	max. 150 mA
Frequency range	0 Hz ... 60 Hz	
Ambient temperature at Temperature class	Ex e:	-20 °C ... +55 °C at T6
	Ex i:	-20 °C ... +60 °C at T4

Version	**Type 8405 Ammeter**	
Certificates	PTB 01 ATEX 2158 U	
Rated working voltage	max. 690 V	
Display range	corresponds to measuring range, to DIN 43701	

Version	Type 8208 Control unit	
Certificates	PTB 01 ATEX 1066 U	
Rated working voltage	max. 500 V	

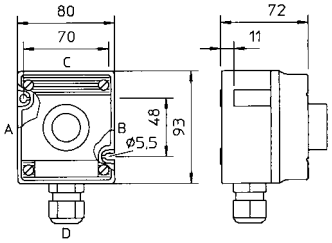
Version	**Type 8082 Contact block**	
Certificates	PTB 00 ATEX 1031 U	
Rated working voltage	max. 500 V	
Rated operating characteristics referred to service category	**Service category AC 15**	
	Rated operating voltage	400 V
	Rated operating current	max. 6 A
	Breaking capacity	max. 1000 VA
	Service category DC 13	
	Rated operating voltage	110 V
	Rated operating current	max. 6 A
	Breaking capacity	max. 110 W

Version	**Type 8008 Control switch**	
Certificates	PTB 00 ATEX 1111 U	
Rated working voltage	690 V + 5 %, AC 1, 220 V DC 1, max. 750 V	
Rated working current	max. 16 A	
Ambient temperature at Temperature class	T6 at 16 A:	max. 40 °C
	T5 at 16 A:	max. 55 °C
	T4 at 16 A:	max. 60 °C

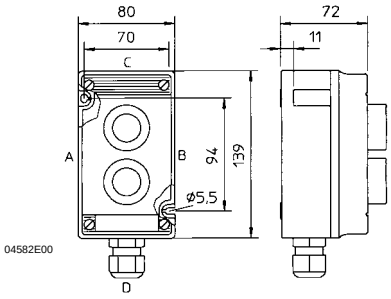
Version	**Type 8453 Control unit**	
Certificates	PTB 01 ATEX 1067 U	
Rated isolation voltage	max. 550 V	

7 Fitting

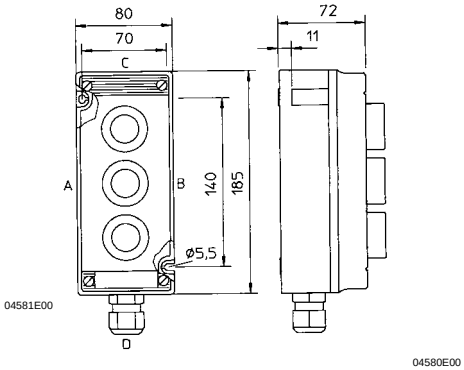
Dimension drawings (all dimensions in mm) - subject to alterations



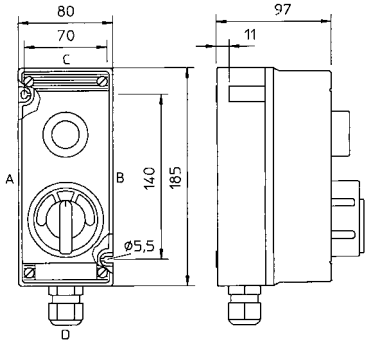
ConSig 8040/11



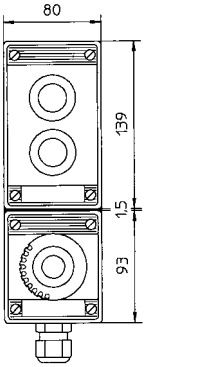
ConSig 8040/12



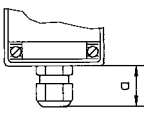
ConSig 8040/13



ConSig 8040/23

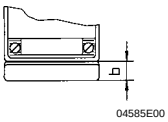


ConSig 8040/11 and ConSig 8040/12 combination



	a [mm]	
	min.	max.
M 20	25	31
M 25	27	33

Additional dimensions for cable glands Series 8161



Flange	b [mm]
Brass	16
Plastic	16

Additional dimensions for flanges

☞	When explosion-protected electrical equipment is exposed to the weather, it is advisable to provide a protective cover or wall.

☞	Transport and storage are only permitted in the original packing.

8 Installation

☞	To avoid moisture and dirt collecting inside the control stations, electrical installation must be carried out in a clean and dry environment. The enclosure may only be opend to carry out installation work and must be carefully closed again following completion of the work.

Mains connection:

- The conductors must be carefully connected.
- The conductor insulation must reach to the terminal. The conductor itself must not be damaged (nicked) when removing the insulation.
- Ensure that the maximum permissible conductor temperatures are not exceeded by suitable selection of cables and means of running them.

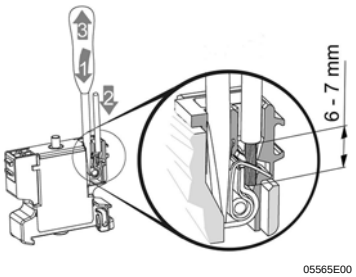
☞	When terminal sleeves are fitted, they must be gas-tight and applied with a suitable tool.

Connecting cables to fitted devices with screw terminals:

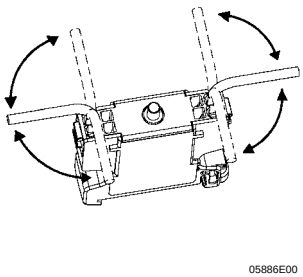
Where fitted devices have screw terminals, 1 or 2 cables may be connected to a single terminal. If the conductors are single-strand, both must have the same cross-section and be of the same material.

Cables may be connected without any special preparation.

Connecting cables to fitted devices with screwless terminals contact block connections shown as example):



05565E00


05886E00

Intrinsically safe circuits:

Only insulated cables whose test voltage is at least AC 500 V and whose quality is at least H05 may be used for intrinsically safe circuits.

The diameter of individual conductors may not be less than 0.1 mm. This also applies to the individual wires of multi-strand cables.

With regard to the insulation and separation of terminals and cables, it should be noted that the insulation test voltage is derived from the sum of the rated operating voltages of intrinsically safe and non-intrinsically safe circuits.

In the case of „intrinsically safe against earth“ then the insulation voltage value is at least 500 V (or double the value of the intrinsically safe circuit rated operating voltage).

In the case of „intrinsically safe against non-intrinsically safe“, then the insulation voltage value is at least 1500 V (or double the rated operating voltage plus 1000 V).

Cables for Ex „i“ circuits must be run at least 8 mm away from the cables of other intrinsically safe circuits.

The only exception to this is the use of cables in which the cores of the intrinsically safe or the non-intrinsically safe circuit are surrounded by an earthed screen.

The pre-conditions for the separation between parts to be connected for intrinsically safe and non-intrinsically safe circuits are:

- a distance of 50 mm around an insulating (≥ 1 mm thick) or earthed metal (≥ 0.45 mm thick) isolating plate or
- an isolating plate which is separated from enclosure walls by a distance of ≤ 1.5 mm.

9 Commissioning

⚠ WARNING
Please convince yourself before operation that the enclosure is completely without damage.

Before commissioning, ensure that:

- the control station has been installed according to the directions
- the control station is not damaged
- there are no foreign bodies inside the control station
- connections have been made correctly
- the cables have been made correctly
- all screws and nuts are fully tightened
- the cable glands and stopping plugs are securely tightened
- unused cable entries are sealed with plugs certified to Directive 94/9/EC, and unused holes are sealed by stopping plugs certified to Directive 94/9/EC.

⚠ WARNING
Excessive tightening of cable glands and stopping plugs can impair the degree of protection.

☞	We recommend the use of type 8290 stopping plugs for unused holes and type 8161 stopping plugs for unused cable entries. Both are available from Fa. R. STAHL Schaltgeräte GmbH.

10 Repairs and Maintenance

⚠ WARNING
Do not open enclosure when supply is switched on! Do not open when intrinsically safe circuits are energised! Exception: Enclosures with intrinsically safe and non-intrinsically safe circuits with the notice „Non-intrinsically safe circuits protected by IP 30 cover“ may be opened when supplied with power.

Repairs and maintenance work on the control stations may only be carried out by appropriately authorized and trained personnel.

⚠ WARNING
Observe the relevant national regulations in the country of use!

☞	If a flameproof device is damaged, **absolutely no** repair or maintenance work is allowed. Please replace the device.

For the purpose of maintenance work, the length of time between periodic checks shall be so set that any system faults likely to arise are found promptly. The maximum interval between checks is three years.

Note the following when establishing the interval between checks:

- the ambient conditions (installed in the open, wind, rain, sunlight, etc)
- the operating conditions (utilisation of system, operator errors)
- manufacturers' instructions in technical documentation (mechanical and electrical life of switchgear)
- big changes in the whole system (e.g. change of zone allocation)

⚠ WARNING
Checks should be by sight, adjacent or detailed, depending on local conditions. If faults are found during these checks which affect the explosion protection, then the system must be taken out of service until the faults have been cleared.

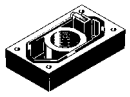
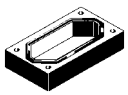
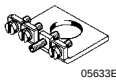
The following points must be checked during maintenance:

- clamping screws holding the cables are securely seated
- compliance with permitted temperatures (to EN 60079-0)
- cracks in plastic enclosures
- damage to the gaskets

11 Accessories and spare parts

⚠ WARNING

Use only original spare parts as well as original accessories made by R. STAHL Schaltgeräte GmbH.

Designation	Illustration	Description	Ordering Code	Weight kg
Plant indentification label	05603E00	plain; for fitting to enclosures 8040; plasic; paper label	8040001850	0,032
Flange in brass	 05626E00	to fit in factory only on sides C and D		– –
		Hole sizes acc. to specification (up to M 20 x 1,5 2 threaded holes are possible)	8040812490	0,280
		with thread 1 x M 25 x 1.5	8040813490	
		with threads 2 x M 20 x 1,5	8040816490	
Flange in plastic	 05625E00	to fit in factory only on sides C and D		– –
		threads acc. to specification	8040815490	0,900
		with threads 2 x M 20 x 1,5	8040823490	0,148
		with threads 2 x M 25 x 1,5	8040817490	0,900
Brass plate	 05633E00	for earthing metal cable glands; sides C and D		– –
		threaded holes M 20 x 1,5	8040007550	0,042
		threaded hole M 25 x 1,5	8040008550	0,037
Combination adaptor set	05616E00	for combining 2 enclosures **Attention!** Lower enclosure requires: tapped hole M 25 in side C (top) Upper enclosure requires: tapped hole M 25 in side D (below)	8040806290	0,019

12 Disposal

Observe the national standard for refuse disposal.

13 Type Examination Certificate (Page 1)

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

(1) **EC-TYPE-EXAMINATION CERTIFICATE**

(Translation)

(2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 94/9/EC**

(3) EC-type-examination Certificate Number:

PTB 01 ATEX 1105

(4) Equipment: Control and indicator module, type 8040/...-.../...

(5) Manufacturer: R. STAHL Schaltgeräte GmbH

(6) Address: Am Bahnhof 30, D-74638 Waldenburg (Württ.), Germany

(7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.

The examination and test results are recorded in the confidential report PTB Ex 01-11181.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014:1997 + A1 + A2	**EN 50017:1998**	**EN 50018:2000**
EN 50019:2000	**EN 50020:1994**	**EN 50028:1987**

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-type-examination Certificate relates only to the design and construction of the specified equipment in accordance with Directive 94/9/EC. Further requirements of this Directive apply to the manufacture and supply of this equipment.

(12) The marking of the equipment shall include the following:

II 2 G EEx edqm ia/ib [ia/ib] II, IIA, IIB, IIC, T6, T5 or T4

Zertifizierungsstelle Explosionsschutz
By order:
Dipl.-Phys. U. Völkel

Braunschweig, October 1, 2001

PHYSIKALISCH-TECHNISCHE BUNDESANSTALT 24

sheet 1/3

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt.
In case of dispute, the German text shall prevail.

Physikalisch-Technische Bundesanstalt • Bundesallee 100 • D-38116 Braunschweig

14 Declaration of conformity

EG-Konformitätserklärung
EC-Declaration Of Conformity
CE-Déclaration De Conformité

PTB 01 ATEX 1105

Wir (we; nous)

R. STAHL Schaltgeräte GmbH, Am Bahnhof 30, D-74638 Waldenburg

erklären in alleiniger Verantwortung, daß das Produkt	**Befehls- und Meldegerät Typ 8040/...-.../...**
hereby declare in our sole responsibility, that the product	Control and signal station Type 8040/...-.../...
déclarons de notre seule responsabilité, que le produit	Postes de commande et de signalisation Type 8040/...-.../...

auf das sich diese Erklärung bezieht, mit der/den folgenden Norm(en) oder normativen Dokumenten übereinstimmt
which is the subject of this declaration, is in conformity with the following standard(s) or normative documents
auquel cette déclaration se rapporte, est conforme aux norme (s) ou aux documents normatifs suivants

Bestimmungen der Richtlinie terms of the directive prescription de la directive	**Titel und/oder Nr. sowie Ausgabedatum der Norm** title and/or No. and date of issue of the standard titre et/ou No. ainsi que date d'émission des normes	
94/9/EG: Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen 94/9/EC: Equipment and protective systems intended for use in potentially explosive atmospheres 94/9/CE: Appareils et systèmes de protection destinés á êtré utilisés en atmosphéres explosibles	EN 50014:1997 + A1 + A2 EN 50017:1998 EN 50018:2000	EN 50019:2000 EN 50020:1994 EN 50028:1987
89/336/EWG: Elektromagnetische Verträglichkeit 89/336/EEC: Electromagnetic compatibility 89/336/CEE: Compatibilité électromagnétique	EN 60947-1:1999 EN 60439-1:1999	

Waldenburg, 14.02.2002

Ort und Datum Place and date lieu et date

i.V.

Leiter Marketing und Entwicklung Head of Marketing and Development Directeur Marketing et Développrment

i.V.

Leiter Qualitätsmanagement Head of quality management dept. Chef du dept.assurance de qualité

TÜV II3/99 Papier chlorfrei

15 Installation, Operation & Maintenance Sheet

R. STAHL, INC.
9001 Knight Road
Houston, TX 77054
Tel: 800-782-4357 FAX: 713-792-9301
E-mail: sales@rstahl.com
Website: www.rstahl.com

INSTALLATION OPERATION & MAINTENANCE SHEET

Series 8040

Non-Metallic Control and Signaling Stations

Please read this entire document before beginning any work.

ConSig

1. Safety Instructions

Installation and maintenance of these control station should only be performed by qualified personnel in accordance with the National Electrical Code (NFPA 70) or the Canadian Electrical Code (CEC) and any local regulations which relate to hazardous (classified) locations.

CAUTION:

- Disconnect power supply before installing or servicing these control stations.
- Operate only undamaged devices with observations of the operating parameters in Section 2.
- For a Class I Zone 1 conduit installation, conduit seals are required, refer to NEC 505.16 (B) (1). For any other cable or conduit installation NO seals are required.
- Use only approved wiring methods for the location, with the appropriate conduit/cable fittings.

2. Certification

NEC Class I, Zone 1 & 2, AEx ed IIC T6; IP66
Class I, Div. 2, Groups ABCD
Class II, Div. 2, Groups FG; Class III
Enclosure Type 3, 4, 4X
Listed - File No. E182378

CEC Class I, Zone 1 & 2, Ex ed IIC T6; IP66
Class I, Div. 2, Groups ABCD
Class II, Div. 1 & 2, Groups EFG; Class III
Enclosure Type 3, 4, 4X
Certified - File No. LR99480-26

II 2 G EEx ed IIC T6; IP66
PTB 01 ATEX 1105

3. Component Data

3.1 Pilot Light, type 8010:
12V - 254V AC/DC, 0-60Hz

Terminal capacity 12-22 AWG. or 2.5 mm² tightened to 18 in-lbs. or 2 N-m

3.2 Contact Block, type 8082:

600V, 10A max.

Terminal capacity 12-22 AWG. or 2.5 mm², tightened to 18 in-lbs. or 2 N-m

3.3 Control Switch, type 8008/2-0...and 8008/2-1..:

600V, 10A max.

Terminal capacity 12-22 AWG. or 2.5 mm² tightened to 18 in-lbs. or 2 N-m.

3.4 Ammeter, type 8405:

600V, Ampere rating see data on device

Terminal capacity 12-22 AWG. or 2.5 mm² tightened to 18 in-lbs. or 2 N-m.

4. Directions for Installation

4.1 Mounting the Enclosure

Using a common screwdriver, remove the four cover screws. Install the enclosure securely using #10 to 1/4" (or M5 to M6) mounting screws, through holes are provided in the box. Mounting dimensions are as shown on page 3.

4.2 Electrical Installation

There are two types of installation methods: Conduit installation and cable installation. When conduit is used the control station(s) were ordered and delivered with a 3/4" conduit hubs. When MC-HL cable is used the control station comes with internal ground plates, with NPT threads into which the appropriate cable connectors with sealing rings have to be fitted.

R. STAHL, INC.
45 Northwestern Drive
Salem, NH 03079-4809
Tel: 800-782-4357 FAX: 603-870-9290
E-mail: sales@rstahl.com
Website: www.rstahl.com

INSTALLATION OPERATION & MAINTENANCE SHEET

4.3 Installations of Cable Connectors:

4.3.1 When field installing connectors, use the provided conductive ground metal plates.

4.3.2 Align the ground plate inside the enclosure so that the threaded hole is centered with the hole in the enclosure.

4.3.3 Insert the connector through the sealing ring and screw the connector into the ground plate inside the enclosure.

4.3.4 Tighten the connector so that the sealing ring is pressed evenly against the enclosure.

4.3.5 Tighten the set screw on the metal plate to prevent the connector from loosening.

4.3.6 In case of through wiring the two ground plates need to be bonded with jumper wire since the FRP enclosures are non-metallic.

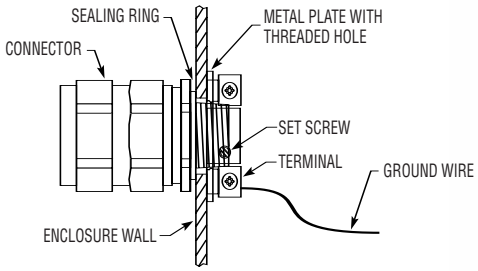
5. Approved Connector Hardware:

MC / TEK Cable Connectors and Sealing RIngs

Size	MCR Series Connector Ordering Code	Sealing Ring Ordering Code
1/2"	MCR050	NCS1
3/4"	MCR075	NCS2

Non-metallic
NPT Close-up Plugs

Size	Ordering Code
1/2"	PD-E-4-0-29-00
3/4"	PD-E-4-0-30-00



6. Connect conductors to the component terminals (capacity: 12 AWG or 2.5 mm^2). Conductor insulation must reach to the terminals. Tighten all terminals to 18 in.-lb. (including those unused) and secure components on mounting rail.

7. Perform a continuity check.

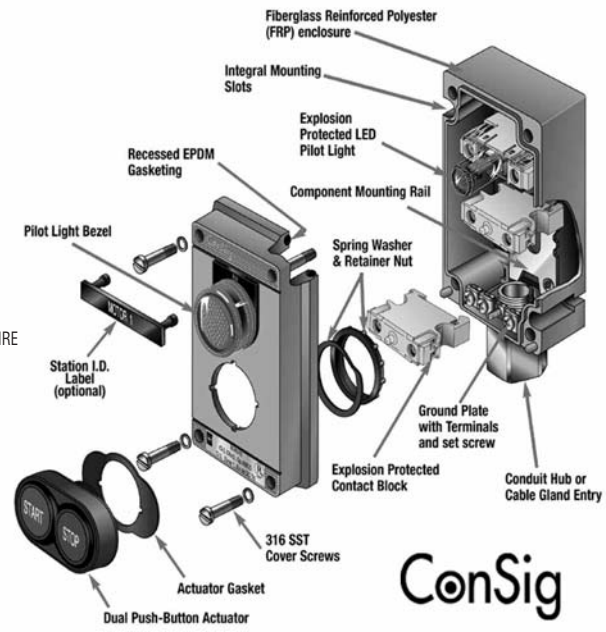
8. Replace the enclosure cover ensuring alignment between actuators and internal components. Actuate the switch and/or pushbuttons to check for free operation.

9. Energize the supply circuit and test the system.

Note:

The nature of these instructions is only informative and does not cover all of the details, variations or combinations in which this equipment may be used, its storage, delivery, installation, safe operation and maintenance.

Since conditions of use of the product are outside of the care, custody and control of the manufacturer, the purchaser should determine the suitability of the product for his intended use, and assumes all risk and liability whatsoever in connection therewith.



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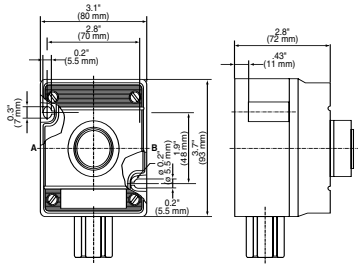
INSTALLATION OPERATION & MAINTENANCE SHEET



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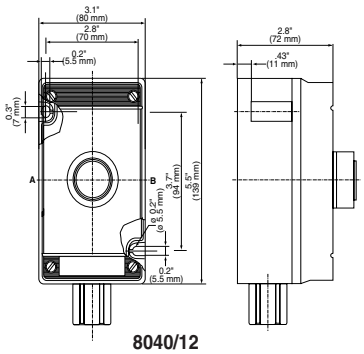

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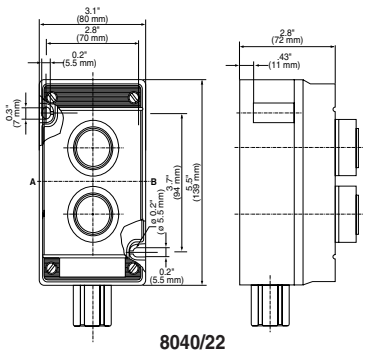

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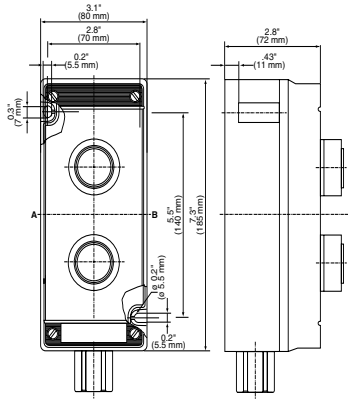

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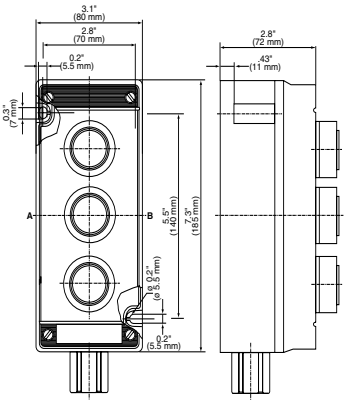

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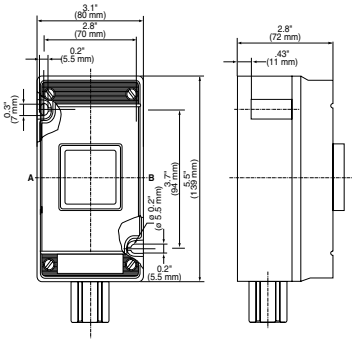

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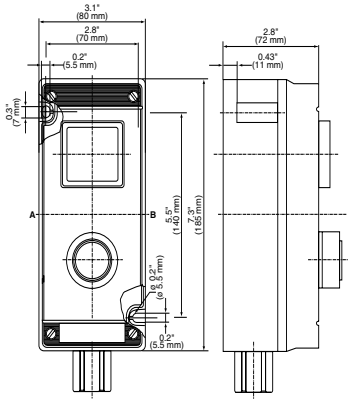

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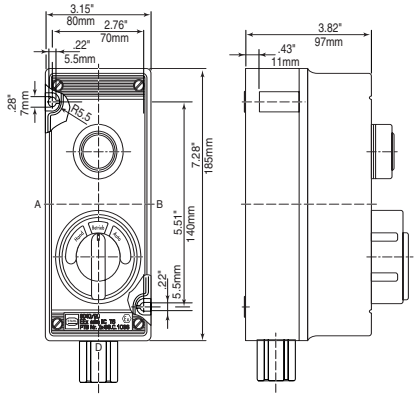

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